

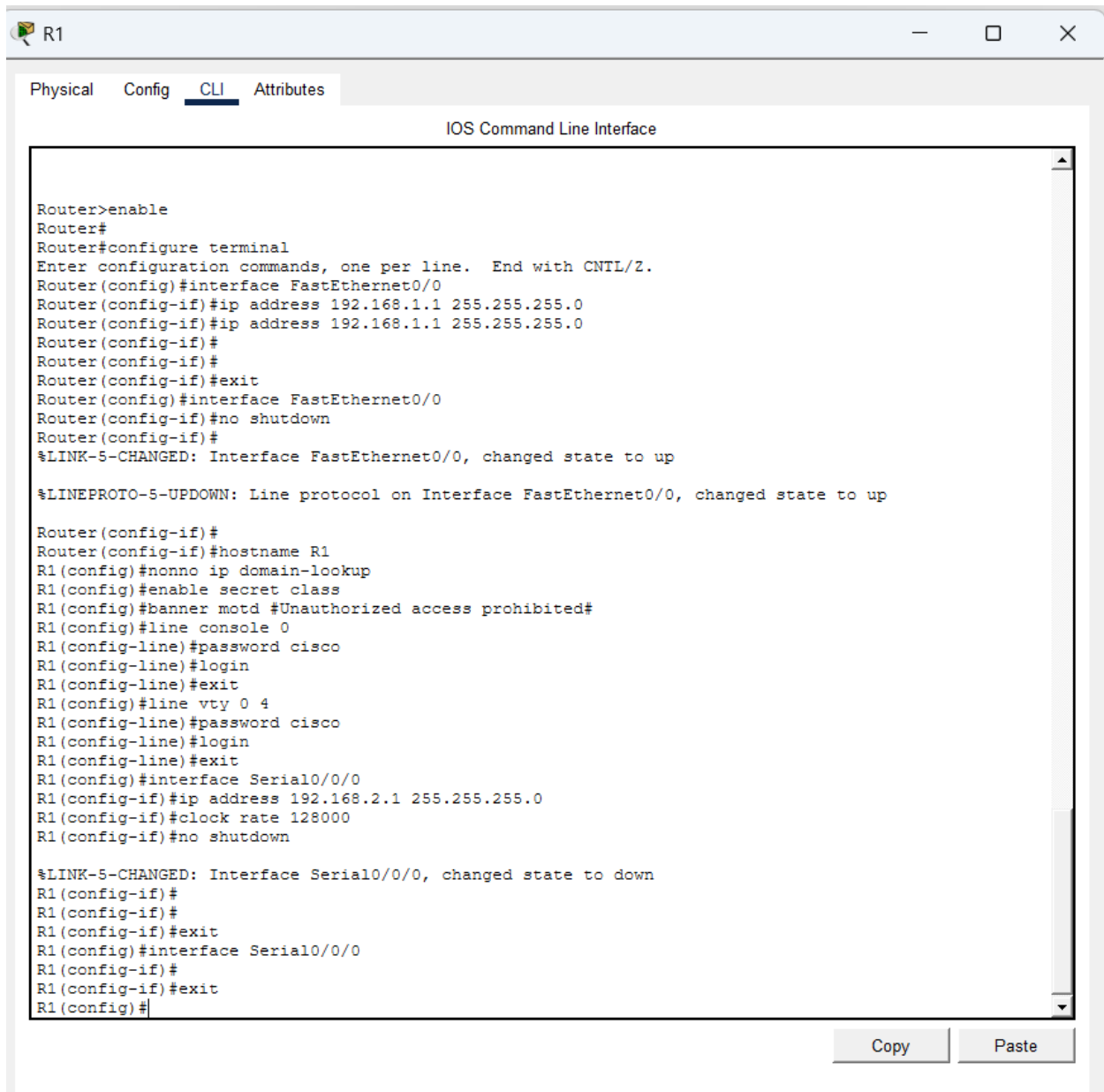
Lab 2 – RIP.

1. Thiết kế lại 3 mô hình mạng theo hướng dẫn bài Lab02 và ghi các bước tiến hành (dòng lệnh thực hiện và chụp màn hình kết quả hoạt động của mạng). Giải thích ý nghĩa từng dòng lệnh

Scenario A: Running RIPv1 on Classful Networks

Task 1, 2, 3:

Cấu hình R1:



```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

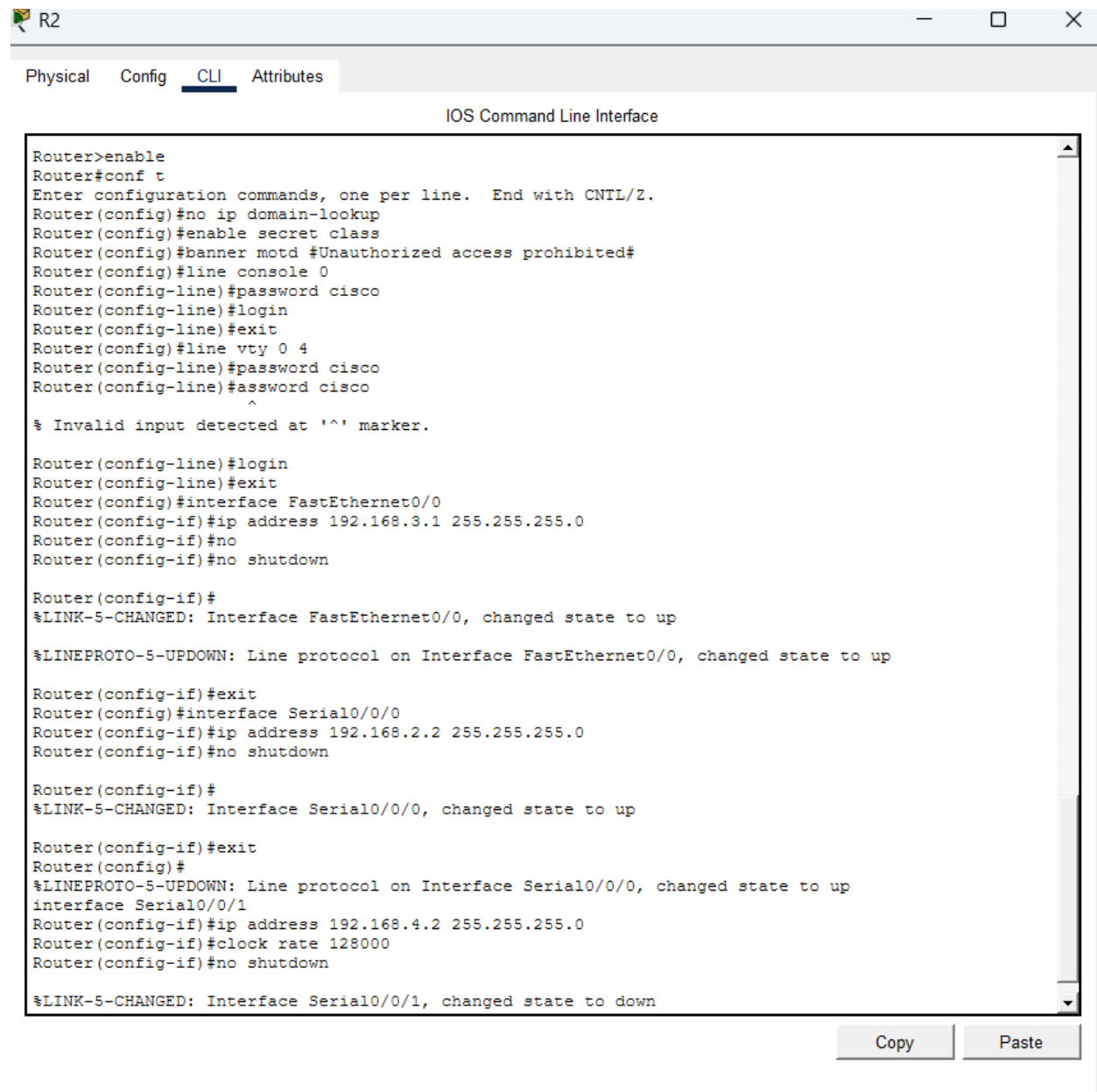
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#
Router(config-if)#hostname R1
R1(config)#no ip domain-lookup
R1(config)#enable secret class
R1(config)#banner motd #Unauthorized access prohibited#
R1(config)#line console 0
R1(config-line)#password cisco
R1(config-line)#login
R1(config-line)#exit
R1(config)#line vty 0 4
R1(config-line)#password cisco
R1(config-line)#login
R1(config-line)#exit
R1(config)#interface Serial0/0/0
R1(config-if)#ip address 192.168.2.1 255.255.255.0
R1(config-if)#clock rate 128000
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down

R1(config-if)#
R1(config-if)#
R1(config-if)#exit
R1(config)#interface Serial0/0/0
R1(config-if)#
R1(config-if)#exit
R1(config)#
```

Cấu hình R2:



The screenshot shows a window titled "R2" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The interface shows a series of commands entered at the "Router" prompt, including enabling the configuration mode, setting domain lookup, enabling secret class, setting MOTD banner, configuring console and vty lines with passwords and login, and configuring FastEthernet0/0 and Serial0/0/0 interfaces with IP addresses and shutdown status. Status messages indicate link changes and line protocol up/down states for the interfaces.

```
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#enable secret class
Router(config)#banner motd #Unauthorized access prohibited#
Router(config)#line console 0
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit
Router(config)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#assword cisco
      ^
% Invalid input detected at '^' marker.

Router(config-line)#login
Router(config-line)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.3.1 255.255.255.0
Router(config-if)#no
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 192.168.2.2 255.255.255.0
Router(config-if)#no shutdown

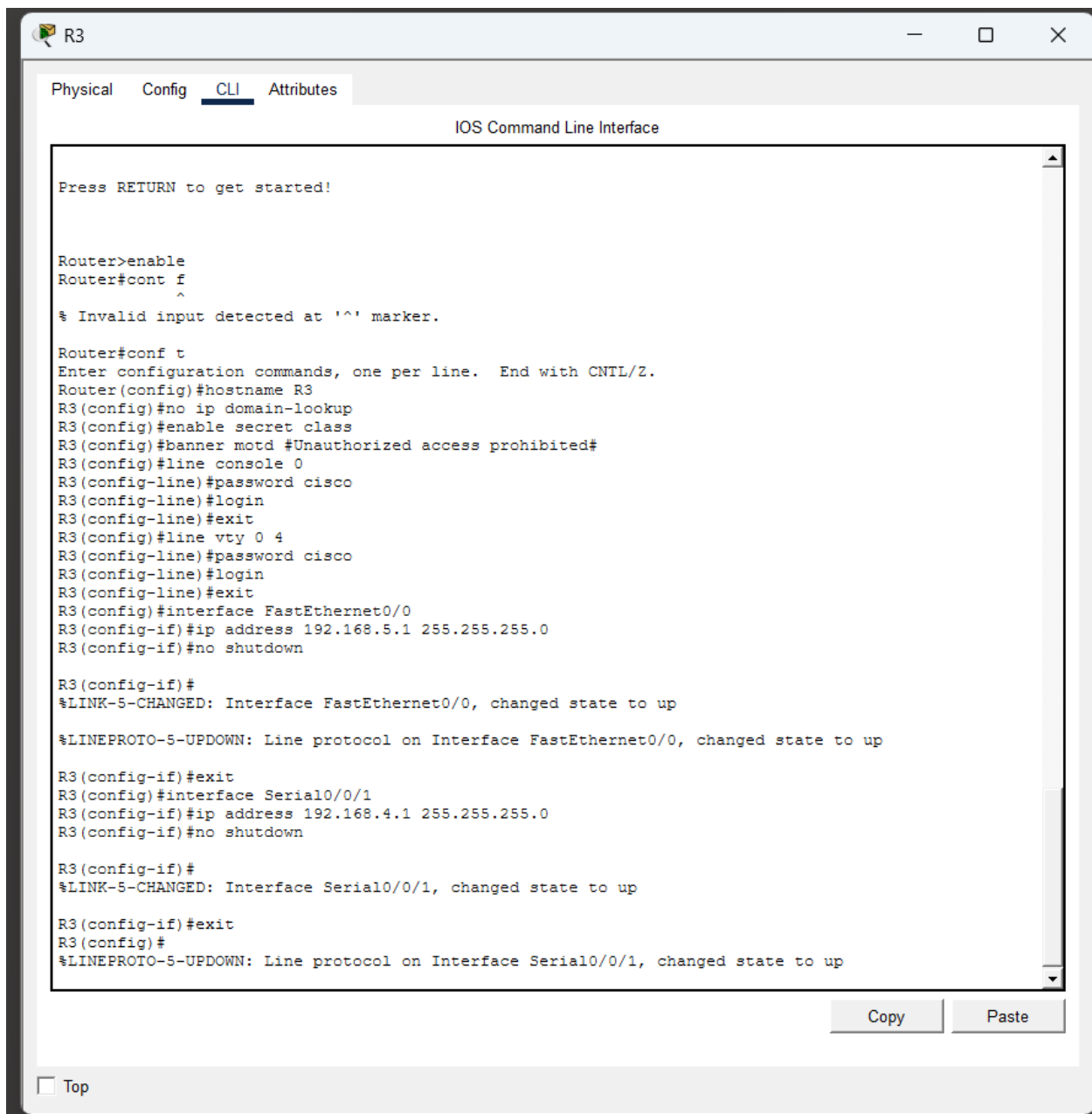
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

Router(config-if)#exit
Router(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
interface Serial0/0/1
Router(config-if)#ip address 192.168.4.2 255.255.255.0
Router(config-if)#clock rate 128000
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
```

Copy Paste

Cấu hình R3:



Cấu hình PC1:

Physical Config Desktop Programming Attributes

Close

IP Configuration X

InterfaceFastEthernet0

IP Configuration

☐ DHCP

☒ Static

IPv4 Address

192.168.1.10

Subnet Mask

255.255.255.0

Default Gateway

192.168.1.1

DNS Server

0.0.0.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address

/

Link Local Address

FE80::2D0:97FF:FE21:5E6B

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

Cấu hình PC2:

PC1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.3.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.3.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::209:7CFF:FE3D:DA39

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

Cấu hình PC3:

PC2

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

192.168.5.10

Subnet Mask

255.255.255.0

Default Gateway

192.168.5.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

/

Link Local Address

FE80::200:CFF:FE1B:7086

Default Gateway

DNS Server

802.1X

Use 802.1X Security

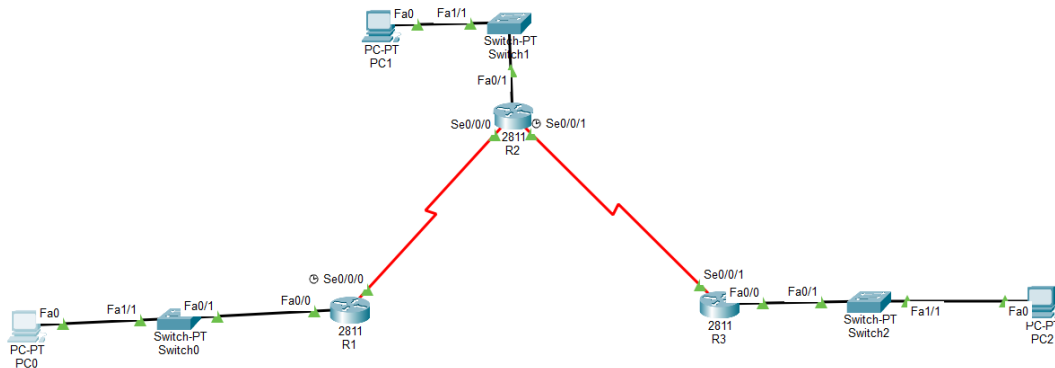
Authentication

MD5

Username

Password

Topology sau khi hoàn chỉnh:



```
Router(config)#hostname R3
R3(config)#no ip domain-lookup
R3(config)#enable secret class
R3(config)#banner motd #Unauthorized access prohibited#
R3(config)#line console 0
R3(config-line)#password cisco
R3(config-line)#login
R3(config-line)#exit
R3(config)#line vty 0 4
R3(config-line)#password cisco
R3(config-line)#login
R3(config-line)#exit
```

Làm tương tự với 2 router còn lại

Task 4:

R1:

```
Press RETURN to get started!

Unauthorized access prohibited

User Access Verification

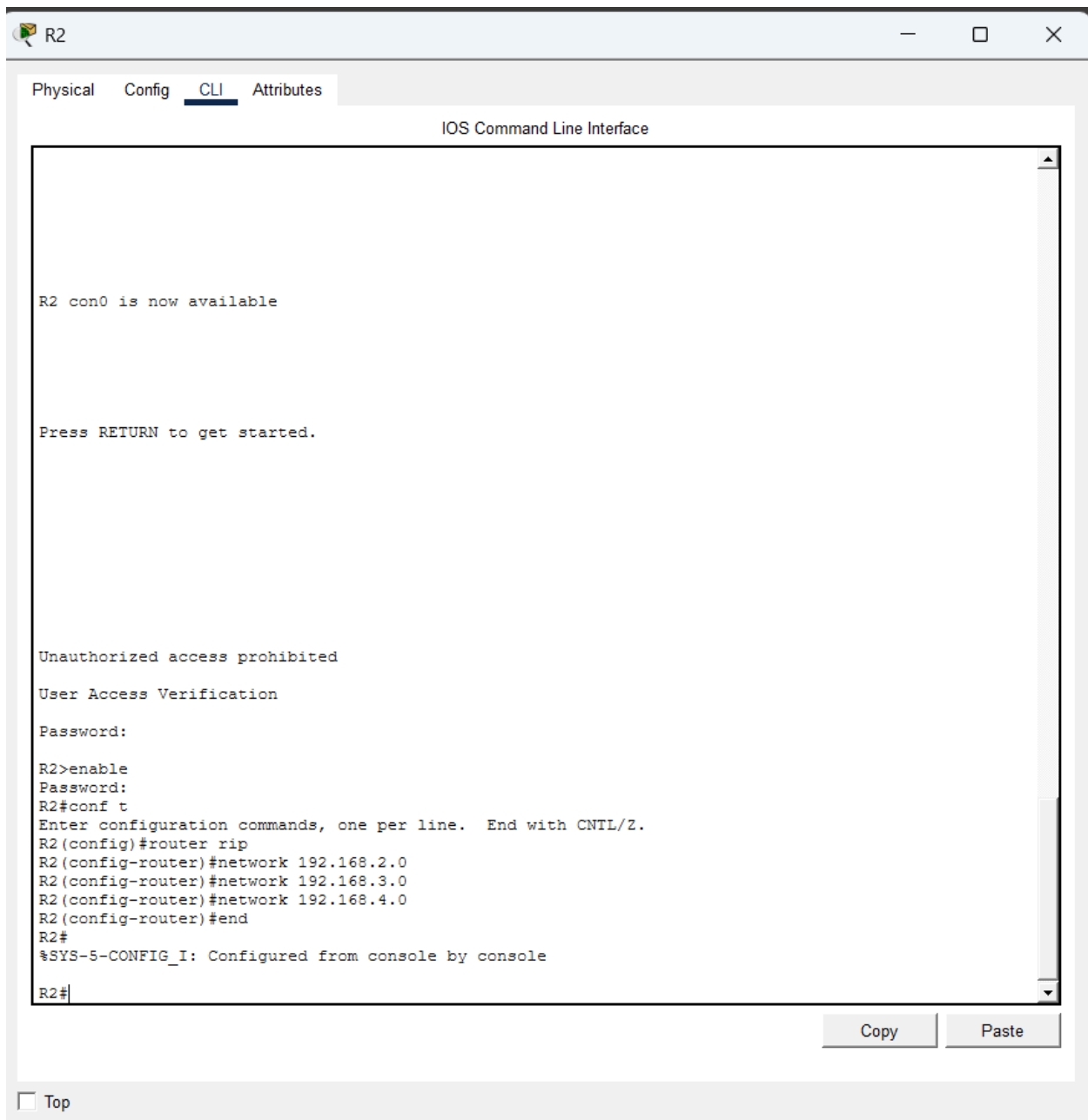
Password:

R1>enable
Password:
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router rip
R1(config-router)#network 192.168.1.0
R1(config-router)#network 192.168.2.0
R1(config-router)#copy running-config startup-config
                        ^
% Invalid input detected at '^' marker.

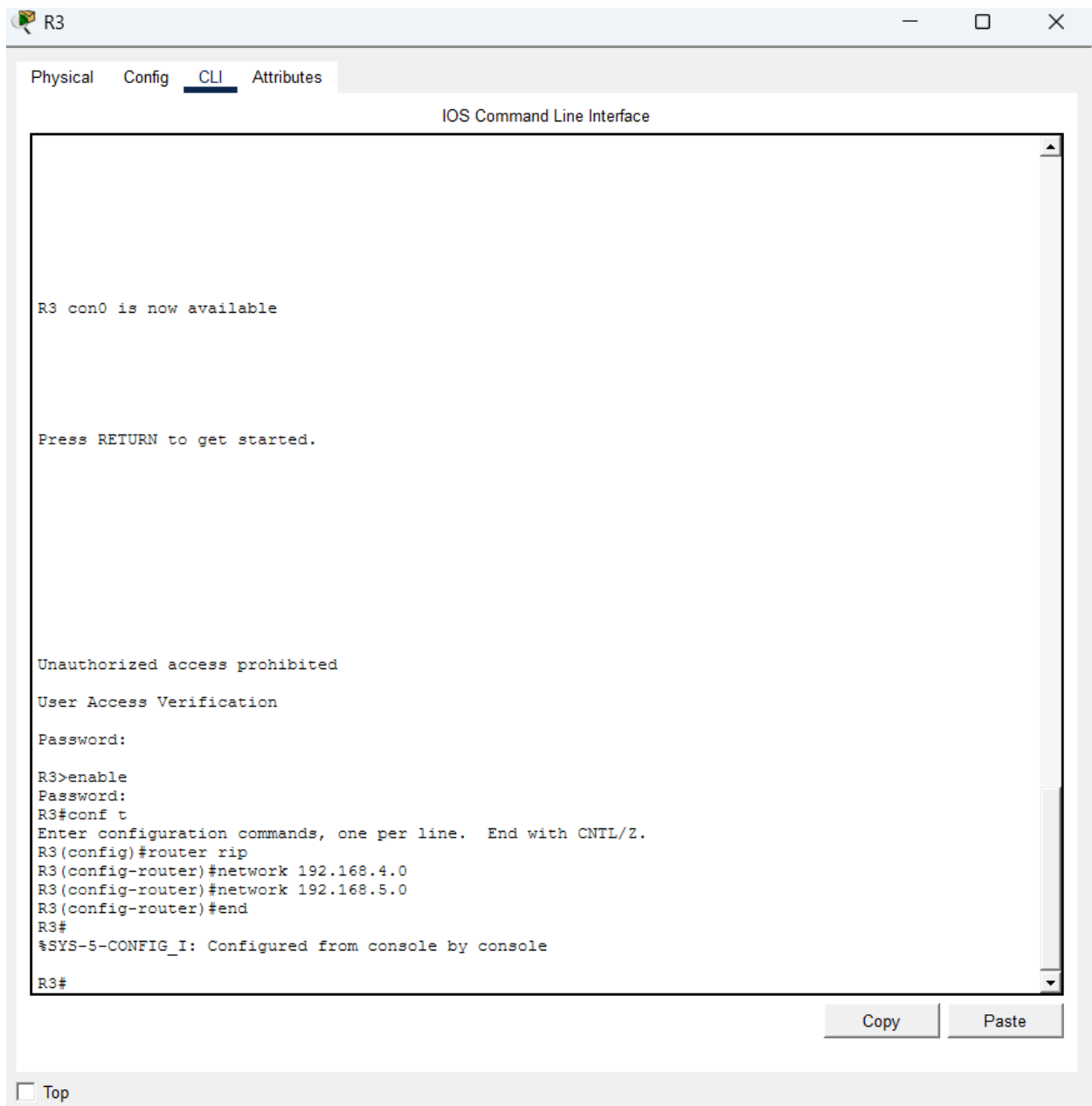
R1(config-router)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#copy running-config startup-config
Destination filename [startup-config]? sceA
%Error copying nvram:sceA (Invalid argument)
R1#
```

R2:



R3:



Kiểm tra rip:

```

R1#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 1 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send Recv  Triggered RIP  Key-chain
FastEthernet0/0      22
Serial0/0/0          22
FastEthernet0/1      22
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  192.168.1.0
  192.168.2.0
  192.168.3.0
  192.168.4.0
  192.168.5.0
Passive Interface(s):
Routing Information Sources:
  Gateway         Distance      Last Update
Distance: (default is 120)

```

```

R2#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 16 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface          Send Recv  Triggered RIP  Key-chain
FastEthernet0/0      12 1
Serial0/0/0          12 1
Serial0/0/1          12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  192.168.2.0
  192.168.3.0
  192.168.4.0
Passive Interface(s):
Routing Information Sources:
  Gateway         Distance      Last Update
  192.168.2.1      120          00:00:00
  192.168.4.1      120          00:00:12
Distance: (default is 120)
R2#

```

```

R3#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 5 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface          Send Recv Triggered RIP Key-chain
  FastEthernet0/0      12 1
  Serial0/0/1          12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  192.168.4.0
  192.168.5.0
Passive Interface(s):
Routing Information Sources:
  Gateway         Distance      Last Update
  192.168.4.2      120          00:00:20
Distance: (default is 120)
R3#

```

Task 5:

Show ip route

R1:

```

Unauthorized access prohibited

```

```

User Access Verification

```

```

Password:

```

```

R1>enable

```

```

Password:

```

```

R1#show ip route

```

```

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

```

```

Gateway of last resort is not set

```

```

      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, FastEthernet0/0
L       192.168.1.1/32 is directly connected, FastEthernet0/0
      192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, Serial0/0/0
L       192.168.2.1/32 is directly connected, Serial0/0/0

```

```

R1#

```

R2:

```
R2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
R    192.168.1.0/24 [120/1] via 192.168.2.1, 00:00:03, Serial0/0/0
    192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.2.0/24 is directly connected, Serial0/0/0
L    192.168.2.2/32 is directly connected, Serial0/0/0
    192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.3.0/24 is directly connected, FastEthernet0/0
L    192.168.3.1/32 is directly connected, FastEthernet0/0
    192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.4.0/24 is directly connected, Serial0/0/1
L    192.168.4.2/32 is directly connected, Serial0/0/1
R    192.168.5.0/24 [120/1] via 192.168.4.1, 00:00:08, Serial0/0/1
```

R3:

Unauthorized access prohibited

User Access Verification

Password:

R3>enable

Password:

Password:

R3#show ip route

```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
R    192.168.1.0/24 [120/2] via 192.168.4.2, 00:00:20, Serial0/0/1
R    192.168.2.0/24 [120/1] via 192.168.4.2, 00:00:20, Serial0/0/1
R    192.168.3.0/24 [120/1] via 192.168.4.2, 00:00:20, Serial0/0/1
    192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.4.0/24 is directly connected, Serial0/0/1
L    192.168.4.1/32 is directly connected, Serial0/0/1
    192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.5.0/24 is directly connected, FastEthernet0/0
L    192.168.5.1/32 is directly connected, FastEthernet0/0
```

R3#

Using debug ip rip

R1:

```

R1#debug ip rip
RIP protocol debugging is on
R1#RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (192.168.1.1)
RIP: build update entries
    192.168.2.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.3.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial0/0/0 (192.168.2.1)
RIP: build update entries
    192.168.1.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.3.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (192.168.3.1)
RIP: build update entries
    192.168.1.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.2.0/24 via 0.0.0.0, metric 1, tag 0
RIP: ignored v1 packet from 192.168.2.2 (illegal version)
RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (192.168.1.1)
RIP: build update entries
    192.168.2.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.3.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial0/0/0 (192.168.2.1)
RIP: build update entries
    192.168.1.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.3.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (192.168.3.1)
RIP: build update entries
    192.168.1.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.2.0/24 via 0.0.0.0, metric 1, tag 0
RIP: ignored v1 packet from 192.168.2.2 (illegal version)
RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (192.168.1.1)
RIP: build update entries
    192.168.2.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.3.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial0/0/0 (192.168.2.1)
RIP: build update entries
    192.168.1.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.3.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (192.168.3.1)
RIP: build update entries
    192.168.1.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.2.0/24 via 0.0.0.0, metric 1, tag 0

```

Tắt debug:

```

RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (192.168.3.1)
RIP: build update entries
    192.168.1.0/24 via 0.0.0.0, metric 1, tag 0
    192.168.2.0/24 via 0.0.0.0, metric 1, tag 0
undebug all
All possible debugging has been turned off
--

```

Tương tự với R2 và R3

Giải thích các câu lệnh:

Các lệnh mới ở lab2 so với lab1 bao gồm:

Lệnh	Dùng để
no ip domain-lookup	Tránh router đi resolve tên khi gõ sai lệnh
enable secret class	Đặt mật khẩu bảo mật cho enable mode
banner motd	Cảnh báo bảo mật khi có người truy cập
line console 0	Bảo vệ truy cập qua console
line vty 0 4	Bảo vệ truy cập qua Telnet/SSH

Scenario B: Running RIPv1 with Subnets and Between Classful Networks

TASK 1: Make Changes between Scenario A and Scenario B

Step 1: Change IP Addressing on Interfaces

R1:

User Access Verification

Password:

```
R1>enable
Password:
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface Serial0/0/0
R1(config-if)#ip address 172.30.2.1 255.255.255.0
R1(config-if)#shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down

R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R1(config-if)#interface FastEthernet0/0
R1(config-if)#ip address 172.30.1.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#show ip interface brief
Interface          IP-Address      OK? Method Status          Protocol
FastEthernet0/0    172.30.1.1      YES manual up              up
FastEthernet0/1    192.168.3.1     YES manual down           down
Serial0/0/0        172.30.2.1      YES manual up              up
Serial0/0/1        unassigned      YES unset  administratively down down
Vlan1              unassigned      YES unset  administratively down down
R1#
```

Giải thích vì sao shutdown rồi lại no shutdown: Tắt mở lại để đảm bảo IOS nhận diện IP mới

R2:


```

R2>enable
Password:
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface Serial0/0/0
R2(config-if)#ip address 172.30.2.2 255.255.255.0
R2(config-if)#shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down

R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R2(config-if)#exit
R2(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R2(config)#interface Serial0/0/1
R2(config-if)#ip address 192.168.4.9 255.255.255.252
R2(config-if)#shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to down

R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

R2(config-if)#exit
R2(config)#e
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

% Ambiguous command: "e"
R2(config)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#show ip interface brief
Interface                IP-Address      OK? Method Status          Protocol
FastEthernet0/0          192.168.3.1     YES manual up              up
FastEthernet0/1          unassigned      YES unset  administratively down down
Serial0/0/0              172.30.2.2      YES manual up              up
Serial0/0/1              192.168.4.9     YES manual up              up
Vlan1                    unassigned      YES unset  administratively down down
R2#

```

R3:

```

R3(config)#interface Serial0/0/1
R3(config-if)#ip address 192.168.4.10 255.255.255.252
R3(config-if)#shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to down

R3(config-if)#no shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

R3(config-if)#exit
R3(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

R3(config)#interface FastEthernet0/0
R3(config-if)#ip address 192.168.5.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#show ip interface brief

```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	192.168.5.1	YES	manual	up	up
FastEthernet0/1	unassigned	YES	unset	administratively down	down
Serial0/0/0	unassigned	YES	unset	administratively down	down
Serial0/0/1	192.168.4.10	YES	manual	up	up
Vlan1	unassigned	YES	unset	administratively down	down

```

R3#

```

Step 2: Verify that Routers are Active

Đã có phần show ip interface brief trong step 1

Step 3: Remove RIP Configurations

R1:

```

Unauthorized access prohibited

User Access Verification

Password:

R1>enable
Password:
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#no router rip
R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#

```

Làm tương tự với R2 và R3

TASK 2: Configure RIP

Step 1: Configure RIP on R1

```
Unauthorized access prohibited
User Access Verification
Password:
R1>enable
Password:
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#no router rip
R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#enable
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router rip
R1(config-router)#network 172.30.0.0
R1(config-router)#passive-interface fastethernet 0/0
R1(config-router)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#
```

Step 2: Configure on R2

```
R2#enable
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router rip
R2(config-router)#network 172.30.0.0
R2(config-router)#network 192.168.4.0
R2(config-router)#passive-interface fastethernet 0/0
R2(config-router)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console
R2#
```

Step 3: Configure on R3

```

R3#enable
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router rip
R3(config-router)#network 192.168.4.0
R3(config-router)#network 192.168.5.0
R3(config-router)#passive-interface fastethernet 0/0
R3(config-router)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

```

TASK 3: Verify RIP Routing

Step 1: Use the show ip route Command

R1:

```

R1#enable
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router rip
R1(config-router)#network 172.30.0.0
R1(config-router)#passive-interface fastethernet 0/0
R1(config-router)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    172.30.0.0/16 is variably subnetted, 4 subnets, 2 masks
C       172.30.1.0/24 is directly connected, FastEthernet0/0
L       172.30.1.1/32 is directly connected, FastEthernet0/0
C       172.30.2.0/24 is directly connected, Serial0/0/0
L       172.30.2.1/32 is directly connected, Serial0/0/0
R       192.168.4.0/24 [120/1] via 172.30.2.2, 00:00:22, Serial0/0/0
R       192.168.5.0/24 [120/2] via 172.30.2.2, 00:00:22, Serial0/0/0

R1#

```

R2:

```

R2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    172.30.0.0/16 is variably subnetted, 3 subnets, 2 masks
R       172.30.1.0/24 [120/1] via 172.30.2.1, 00:00:10, Serial0/0/0
C       172.30.2.0/24 is directly connected, Serial0/0/0
L       172.30.2.2/32 is directly connected, Serial0/0/0
    192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.3.0/24 is directly connected, FastEthernet0/0
L       192.168.3.1/32 is directly connected, FastEthernet0/0
    192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.8/30 is directly connected, Serial0/0/1
L       192.168.4.9/32 is directly connected, Serial0/0/1
R       192.168.5.0/24 [120/1] via 192.168.4.10, 00:00:02, Serial0/0/1

```

R3:

```

R3#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

R       172.30.0.0/16 [120/1] via 192.168.4.9, 00:00:21, Serial0/0/1
    192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.8/30 is directly connected, Serial0/0/1
L       192.168.4.10/32 is directly connected, Serial0/0/1
    192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.5.0/24 is directly connected, FastEthernet0/0
L       192.168.5.1/32 is directly connected, FastEthernet0/0

R3#

```

Step 2: Use the show ip protocols Command

R1:

```

R1#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 10 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface          Send Recv Triggered RIP Key-chain
  Serial0/0/0         12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  172.30.0.0
Passive Interface(s):
  FastEthernet0/0
Routing Information Sources:
  Gateway            Distance      Last Update
  172.30.2.2         120          00:00:06
Distance: (default is 120)
R1#

```

R2:

```

R2#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 8 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface          Send Recv Triggered RIP Key-chain
  Serial0/0/0         12 1
  Serial0/0/1         12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  172.30.0.0
  192.168.4.0
Passive Interface(s):
  FastEthernet0/0
Routing Information Sources:
  Gateway            Distance      Last Update
  172.30.2.1         120          00:00:03
  192.168.4.10       120          00:00:01
Distance: (default is 120)
R2#

```

R3:

```

R3#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 0 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 1, receive any version
  Interface          Send Recv Triggered RIP Key-chain
  Serial0/0/1         12 1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  192.168.4.0
  192.168.5.0
Passive Interface(s):
  FastEthernet0/0
Routing Information Sources:
  Gateway            Distance      Last Update
  192.168.4.9         120          00:00:18
Distance: (default is 120)
R3#

```

Step 3: Use the debug ip rip Command

```

R1#debug ip rip
RIP protocol debugging is on
R1#RIP: received v1 update from 172.30.2.2 on Serial0/0/0
  192.168.4.0 in 1 hops
  192.168.5.0 in 2 hops
RIP: sending v1 update to 255.255.255.255 via Serial0/0/0 (172.30.2.1)
RIP: build update entries
  network 172.30.1.0 metric 1
RIP: received v1 update from 172.30.2.2 on Serial0/0/0
  192.168.4.0 in 1 hops
  192.168.5.0 in 2 hops
RIP: sending v1 update to 255.255.255.255 via Serial0/0/0 (172.30.2.1)
RIP: build update entries
  network 172.30.1.0 metric 1
undebug all
All possible debugging has been turned off
R1#

```

Quan sát:

- R1: KHÔNG gửi updates ra FastEthernet0/0 (do passive-interface)
- R1 chỉ gửi updates ra Serial0/0/0
- R1 nhận updates từ R2

Scenario C: Running RIPv1 on a Stub Network

Step 1: Remove network 192.168.4.0 from R2 RIP Configuration

User Access Verification

Password:

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R2>enable

Password:

R2#conf t

Enter configuration commands, one per line. End with CNTL/Z.

R2(config)#router rip

R2(config-router)#no network 192.168.4.0

R2(config-router)#

Step 2: Completely Remove RIP from R3

User Access Verification

Password:

R3>enable

Password:

R3#conf t

Enter configuration commands, one per line. End with CNTL/Z.

R3(config)#no router rip

R3(config)#end

R3#

%SYS-5-CONFIG_I: Configured from console by console

R3#

TASK 2: Configure Static Route on R3


```

R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ip route 172.30.0.0 255.255.252.0 serial0/0/1
%Default route without gateway, if not a point-to-point interface, may impact performance
R3(config)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

    172.30.0.0/22 is subnetted, 1 subnets
S       172.30.0.0/22 is directly connected, Serial0/0/1
    192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.8/30 is directly connected, Serial0/0/1
L       192.168.4.10/32 is directly connected, Serial0/0/1
    192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.5.0/24 is directly connected, FastEthernet0/0
L       192.168.5.1/32 is directly connected, FastEthernet0/0

```

TASK 3: Configure Default Static Route on R2

Step 1: Configure R2 to Send Default Traffic to R3

```

Unauthorized access prohibited

User Access Verification

Password: cico
Password:

R2>enable
Password:
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip route 0.0.0.0 0.0.0.0 serial 0/0/1
%Default route without gateway, if not a point-to-point interface, may impact performance
R2(config)#show ip route
^
% Invalid input detected at '^' marker.

R2(config)#show ip route
^
% Invalid input detected at '^' marker.

R2(config)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

```

Step 2: Configure R2 to Send Default Route Information to R1

```
R2#enable
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router rip
R2(config-router)#default-information originate
R2(config-router)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console
R2#
```

TASK 4: Verify RIP Routing

Step 1: View Routing Table on R2 and R1

R2:

```
R2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is 0.0.0.0 to network 0.0.0.0

    172.30.0.0/16 is variably subnetted, 3 subnets, 2 masks
R       172.30.1.0/24 [120/1] via 172.30.2.1, 00:00:11, Serial0/0/0
C       172.30.2.0/24 is directly connected, Serial0/0/0
L       172.30.2.2/32 is directly connected, Serial0/0/0
    192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.3.0/24 is directly connected, FastEthernet0/0
L       192.168.3.1/32 is directly connected, FastEthernet0/0
    192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.8/30 is directly connected, Serial0/0/1
L       192.168.4.9/32 is directly connected, Serial0/0/1
S*    0.0.0.0/0 is directly connected, Serial0/0/1
```

R1:

```

User Access Verification

Password:

R1>enbale
Translating "enbale"
% Unknown command or computer name, or unable to find computer address

R1>enable
Password:
R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is 172.30.2.2 to network 0.0.0.0

    172.30.0.0/16 is variably subnetted, 4 subnets, 2 masks
C       172.30.1.0/24 is directly connected, FastEthernet0/0
L       172.30.1.1/32 is directly connected, FastEthernet0/0
C       172.30.2.0/24 is directly connected, Serial0/0/0
L       172.30.2.1/32 is directly connected, Serial0/0/0
R*    0.0.0.0/0 [120/1] via 172.30.2.2, 00:00:05, Serial0/0/0

R1#

```

Step 2: View RIP Updates with Debug

R1:

```

R1#debug ip rip
RIP protocol debugging is on
R1#RIP: sending v1 update to 255.255.255.255 via Serial0/0/0 (172.30.2.1)
RIP: build update entries
      network 172.30.1.0 metric 1
RIP: received v1 update from 172.30.2.2 on Serial0/0/0
      0.0.0.0 in 1 hops
RIP: sending v1 update to 255.255.255.255 via Serial0/0/0 (172.30.2.1)
RIP: build update entries
      network 172.30.1.0 metric 1
RIP: received v1 update from 172.30.2.2 on Serial0/0/0
      0.0.0.0 in 1 hops
undebug all
All possible debugging has been turned off
R1#

```

Step 3: Discontinue Debug Output

Chính là lệnh undebug all trong step 2

Step 4: View Routing Table on R3

R3:

User Access Verification

Password: cico
Password:

```
R3>enable
Password:
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

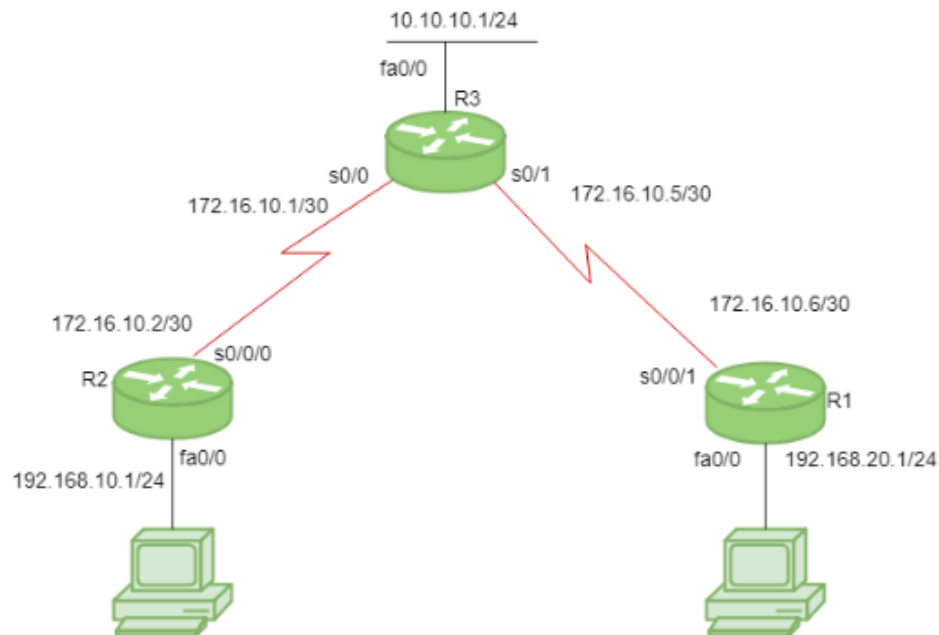
Gateway of last resort is not set

```

    172.30.0.0/22 is subnetted, 1 subnets
S       172.30.0.0/22 is directly connected, Serial0/0/1
    192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.8/30 is directly connected, Serial0/0/1
L       192.168.4.10/32 is directly connected, Serial0/0/1
    192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.5.0/24 is directly connected, FastEthernet0/0
L       192.168.5.1/32 is directly connected, FastEthernet0/0
```

R3#

1. Làm tương tự thiết lập giao thức RIP cho mạng sau



Cấu hình:

```
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#no ip domain-lookup
R1(config)#enable secret class
R1(config)#banner motd #Unauthorized access prohibited#
R1(config)#line console 0
R1(config-line)#password cisco
R1(config-line)#login
R1(config-line)#exit
R1(config)#line vty 0 4
R1(config-line)#password cisco
R1(config-line)#login
R1(config-line)#exit
R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#|
```

Tương tự với R2 và R3

Cấu hình Interface

R1:

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#interface s0/0/1
R1(config-if)#ip address 172.16.10.6 255.255.255.252
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R1(config-if)#interface fa0/0
R1(config-if)#ip address 192.168.20.1 255.255.255.0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#
```

R2:

```

Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface s0/0/0
Router(config-if)#ip address 172.16.10.2 255.255.255.252
Router(config-if)#clock rate 64000
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
Router(config-if)#exit
Router(config)#interface fa0/0
Router(config-if)#interface fa0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#interface s0/0
%Invalid interface type and number

```

R3:

```

R3(config)#interface s0/0
%Invalid interface type and number
R3(config)#interface s0/0
%Invalid interface type and number
R3(config)#interface s0/0
%Invalid interface type and number
R3(config)#interface s0/0/0
R3(config-if)#ip address 172.16.10.1 255.255.255.252
R3(config-if)#no shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

R3(config-if)#exit
R3(config)#interface s0/0/1
R3(config-if)#ip address 172.16.10.5 255.255.255.252
R3(config-if)#clock rate 64000
R3(config-if)#no shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

R3(config-if)#interface fa0/0
R3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
ip address 10.10.10.1 255.255.255.0
R3(config-if)#interface fa0/0
R3(config-if)#ip address 10.10.10.1 255.255.255.0

```

Cấu hình PC:

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.20.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.20.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::20C:85FF:FE19:64CD

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

PC1

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

192.168.10.2

Subnet Mask

255.255.255.0

Default Gateway

192.168.10.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

/

Link Local Address

FE80::203:E4FF:FE8D:B38

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

Username

Password

Top

PC2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.10.10.2

Subnet Mask 255.0.0.0

Default Gateway 10.10.10.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::210:11FF:FEA0:921C

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

Cấu hình RIP:

```
R1>enable
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router rip
R1(config-router)#version 2
R1(config-router)#no auto-summary
R1(config-router)#network 192.168.20.0
R1(config-router)#network 172.16.10.4
R1(config-router)#
```

```
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#no auto-summary
R2(config-router)#network 192.168.10.0
R2(config-router)#network 172.16.10.0
R2(config-router)#
```

```
R3>enable
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router rip
R3(config-router)#version 2
R3(config-router)#no auto-summary
R3(config-router)#10.10.10.0
      ^
% Invalid input detected at '^' marker.

R3(config-router)#network 10.10.10.0
R3(config-router)#network 172.16.10.0
R3(config-router)#network 172.16.10.4
R3(config-router)#
```

Verify RIP Configuration

```
R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
      10.0.0.0/24 is subnetted, 1 subnets
R       10.10.10.0/24 [120/1] via 172.16.10.5, 00:00:21, Serial0/0/1
      172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
R       172.16.10.0/30 [120/1] via 172.16.10.5, 00:00:21, Serial0/0/1
C       172.16.10.4/30 is directly connected, Serial0/0/1
L       172.16.10.6/32 is directly connected, Serial0/0/1
      192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.20.0/24 is directly connected, FastEthernet0/0
L       192.168.20.1/32 is directly connected, FastEthernet0/0
```

```
R1#
```

```
R2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
      172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.16.10.4/30 is directly connected, Serial0/0/0
L       172.16.10.6/32 is directly connected, Serial0/0/0
      192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.20.0/24 is directly connected, FastEthernet0/0
L       192.168.20.1/32 is directly connected, FastEthernet0/0
```

R2#

```
R3#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.10.10.0/24 is directly connected, FastEthernet0/0
L       10.10.10.1/32 is directly connected, FastEthernet0/0
      172.16.0.0/16 is variably subnetted, 4 subnets, 2 masks
C       172.16.10.0/30 is directly connected, Serial0/0/0
L       172.16.10.1/32 is directly connected, Serial0/0/0
C       172.16.10.4/30 is directly connected, Serial0/0/1
L       172.16.10.5/32 is directly connected, Serial0/0/1
R       192.168.20.0/24 [120/1] via 172.16.10.6, 00:00:19, Serial0/0/1
```

R3#

Kiểm tra RIP Protocols

```

R1#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 11 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send Recv Triggered RIP Key-chain
  FastEthernet0/0      22
  Serial0/0/1          22
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.16.0.0
  192.168.20.0
Passive Interface(s):
Routing Information Sources:
  Gateway         Distance      Last Update
  172.16.10.5      120           00:00:15
Distance: (default is 120)
R1#

```

```

R2#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 16 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send Recv Triggered RIP Key-chain
  Serial0/0/0        22
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.16.0.0
  192.168.10.0
Passive Interface(s):
Routing Information Sources:
  Gateway         Distance      Last Update
Distance: (default is 120)
R2#

```

```

R3#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 26 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send Recv Triggered RIP Key-chain
  FastEthernet0/0      22
  Serial10/0/0         22
  Serial10/0/1         22
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  10.0.0.0
  172.16.0.0
Passive Interface(s):
Routing Information Sources:
  Gateway            Distance      Last Update
  172.16.10.6         120          00:00:04
Distance: (default is 120)
R3#

```

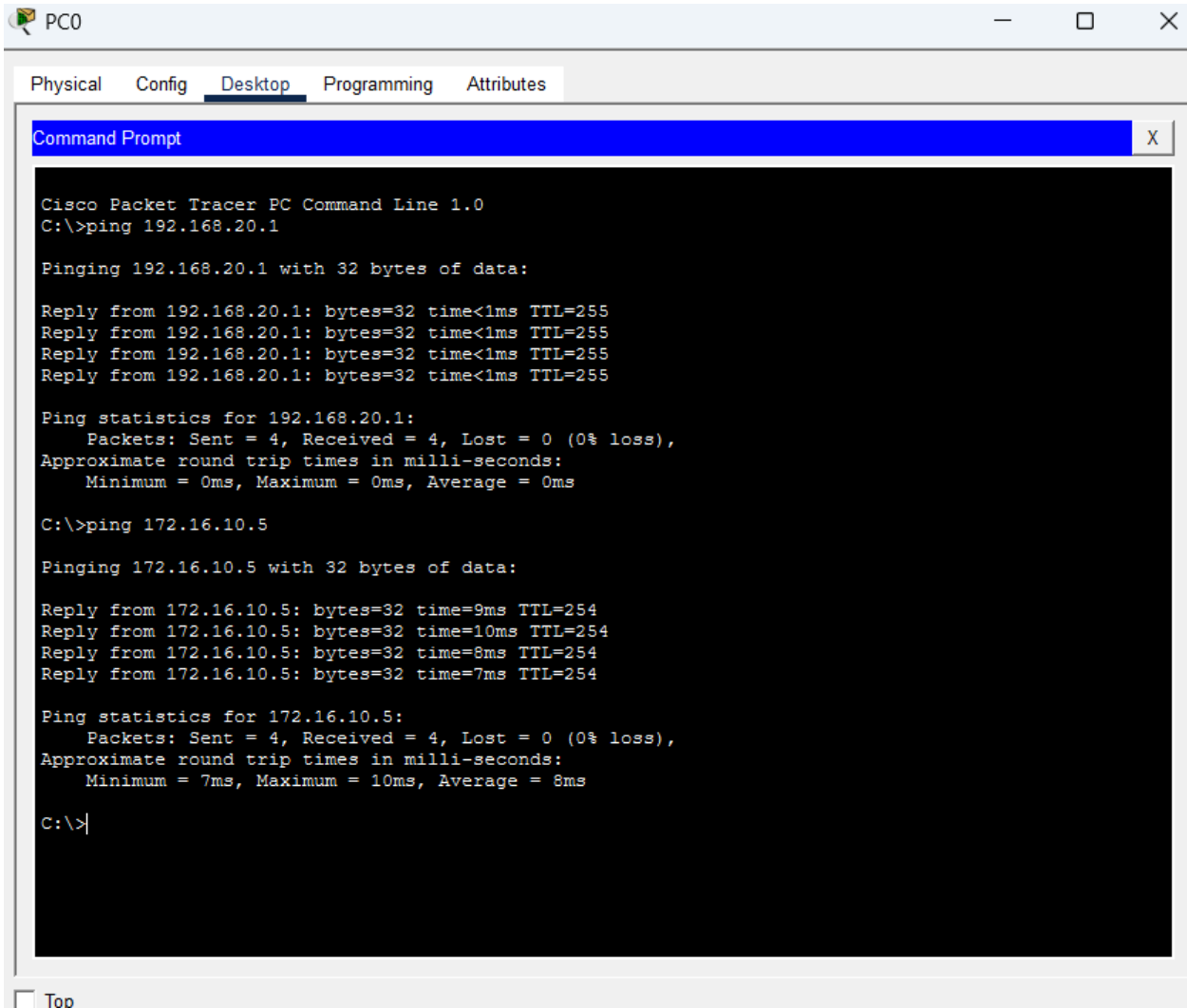
Debug RIP

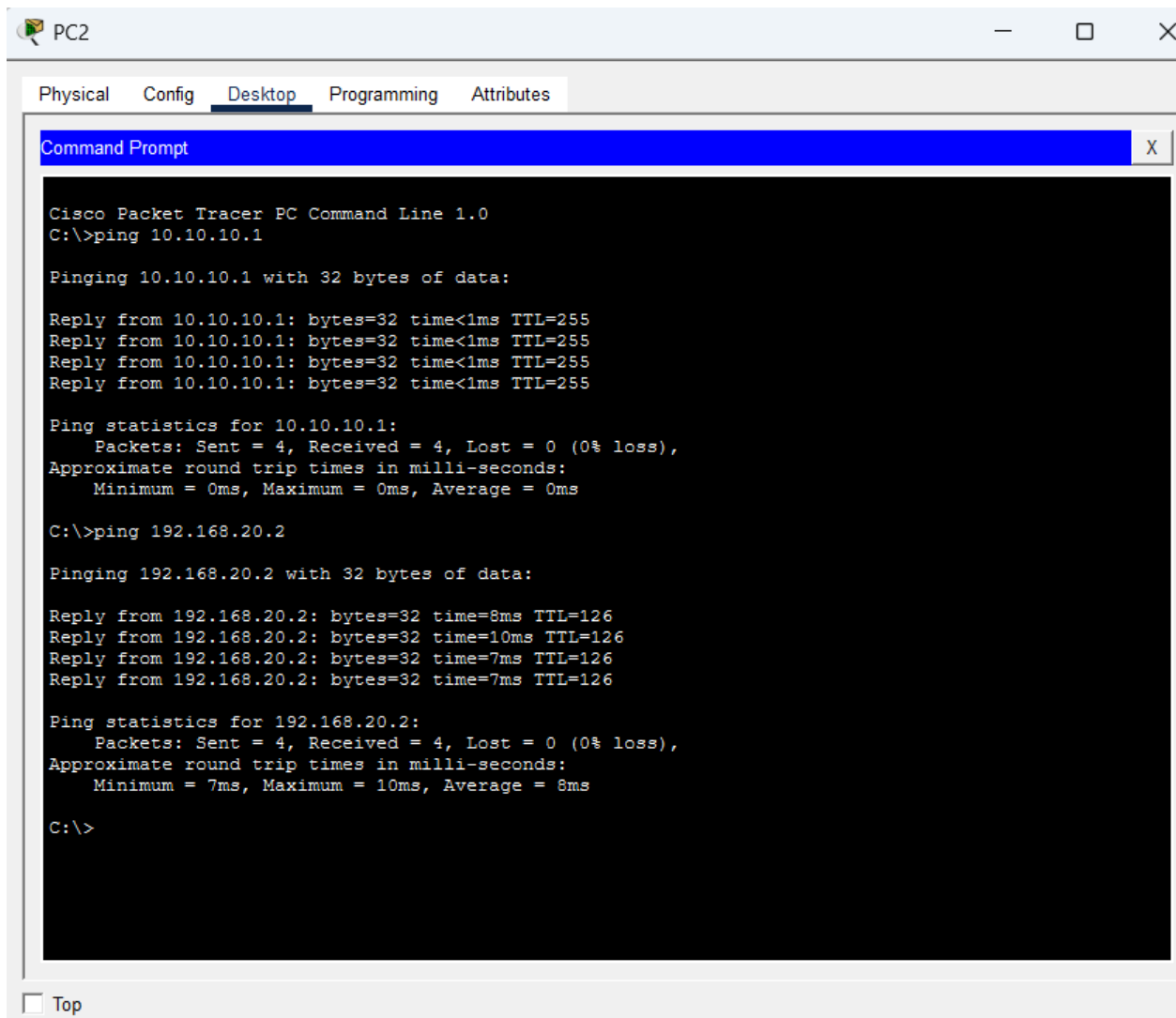
```

R1#debug ip rip
RIP protocol debugging is on
R1#RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (192.168.20.1)
RIP: build update entries
  10.10.10.0/24 via 0.0.0.0, metric 2, tag 0
  172.16.10.0/30 via 0.0.0.0, metric 2, tag 0
  172.16.10.4/30 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial10/0/1 (172.16.10.6)
RIP: build update entries
  192.168.20.0/24 via 0.0.0.0, metric 1, tag 0
RIP: received v2 update from 172.16.10.5 on Serial10/0/1
  10.10.10.0/24 via 0.0.0.0 in 1 hops
  172.16.10.0/30 via 0.0.0.0 in 1 hops
undebug all
All possible debugging has been turned off
R1#

```

Test Connectivity (ping)





R1#ping 172.16.10.5

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.10.5, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 7/8/11 ms

R1#ping 10.10.10.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.10.10.1, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 2/7/10 ms

R1#

R3#ping 172.16.10.6

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.16.10.6, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 7/8/10 ms

R3#ping 192.168.20.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.20.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 5/8/11 ms

R3#